

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

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Applicant's or agent's file reference PF020079	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/PEA/416)	
International application No. PCT/EP 03/50265	International filing date (day/month/year) 25.06.2003	Priority date (day/month/year) 27.06.2002
International Patent Classification (IPC) or both national classification and IPC G06F9/46		
Applicant THOMSON LICENSING SA ET AL.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 7 sheets, including this cover sheet.
 - ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 4 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the opinion
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 27.01.2004	Date of completion of this report 23.11.2004
Name and mailing address of the international preliminary examining authority:  European Patent Office - P.B. 5818 Patentlaan 2 NL-2280 HV Rijswijk - Pays Bas Tel. +31 70 340 - 2040 Tx: 31 651 epo nl Fax: +31 70 340 - 3016	Authorized Officer La, V Telephone No. +31 70 340-4287 

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International application No. **PCT/EP 03/50265**

I. Basis of the report

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17)*):

Description, Pages

1-16 as originally filed

Claims, Numbers

1-20 received on 21.10.2004 with letter of 14.10.2004

Drawings, Sheets

1/3-3/3 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
☒ the claims, Nos.: 21-28
☐ the drawings, sheets:

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5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

(Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.)

6. Additional observations, if necessary:

**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Statement

Novelty (N)	Yes: Claims	1,10
	No: Claims	
Inventive step (IS)	Yes: Claims	
	No: Claims	1,10
Industrial applicability (IA)	Yes: Claims	1,10
	No: Claims	

2. Citations and explanations

see separate sheet

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

Reference is made to the following documents :

D1: EP-A-1 037 145 (HEWLETT PACKARD CO) 20 September 2000 (2000-09-20)

D2: EP-A-0 949 816 (THOMSON CONSUMER ELECTRONICS) 13 October 1999
(1999-10-13)

D3: US-A-5 768 593 (BROWN JORG ANTHONY ET AL) 16 June 1998 (1998-06-16)

1. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of independent claim 1 does not involve an inventive step in the sense of Article 33(3) PCT.

1.1 Document D1 discloses (the references in parentheses applying to this document): a programmable data processing device (10) comprising a loading engine (paragraphs [0010], [0021], figure 1) suitable for receiving portions of code of a first type and/or data from a stream of a broadcast network in which said portions are repeatedly transmitted, a storage means (paragraph [0010]) for storing the portions received by the loading engine, an execution engine (12, 50) for executing an application embodied by the received portions (claim 1, paragraphs [0021]-[0026]), a translating engine (54) for translating the first type code into a native code of the execution engine (claim 1, paragraphs [0025], [0026]), wherein the translating engine is adapted to compile at least a certain one of said received portions into native code, these portions being selected by a control information (paragraphs [0010], [0013], [0023]-[0026]), to store the thus compiled portion in the storage means and to interpret other portions of code, and wherein the execution engine is adapted to process compiled code and interpreted code within a same application (paragraphs [0006], [0007], [0013], [0014], [0021]-[0026]).

The subject-matter of claim 1 therefore differs from this known document D1 in that: the portions to be compiled are selected by a control information received from the stream from which the portions of code of a first type and/or data are received in the loading engine.

The problem to be solved by the present invention may therefore be regarded as how to allow the code developer to specify which portions of the code are to be compiled

(see description, page 5 lines 19,20 and lines 31-35).

The solution proposed in claim 1 of the present application cannot be considered as involving an inventive step (Article 33(3) PCT) for the following reasons:

Document D2 teaches that special signals for controlling the execution of an application can be sent along with the application code (paragraph [0001], column 1 lines 13-23, paragraph [0006]). Departing from D1 and confronted with the problem above, the skilled person would, based on the teachings of D2, consider sending some control information specifying which portions of the code are to be compiled along with the application code, thereby arriving at the solution proposed in claim 1.

Therefore the subject-matter of claim 1 does not involve an inventive step.

1.2 It is also possible to demonstrate the lack of inventive step of claim 1 using document D3, as follows :

Document D3 discloses (the references in parentheses applying to this document): a programmable data processing device (100) comprising a loading engine (figure 1) suitable for receiving portions of code of a first type and/or data from a stream of a broadcast network in which said portions are repeatedly transmitted, a storage means (118) suitable for storing the portions received by the loading engine (column 3 lines 38 and 39, column 6 lines 28 and 29) , an execution engine (figure 1) for executing an application embodied by the received portions, a translating engine (114,116) for translating the first type code into a native code of the execution engine (column 3 lines 35-44), wherein the translating engine is adapted to compile at least a certain one of said received portions into native code (column 3 lines 40 and 41, column 3 line 54 - column 4 line 19, column 7 lines 16-64), to store the thus compiled portion in the storage means (column 3 lines 38 and 39, column 6 lines 28 and 29) and to interpret other portions of code, which have been predefined to be interpreted (column 3 lines 41-44, column 3 line 54 - column 4 line 19, column 7 lines 16-64), and wherein the execution engine is adapted to process compiled code and interpreted code within a same application (column 3 line 35 - column 4 line 3).

Since D3 discloses a predefined set of instructions to be interpreted, there is control information attached to the code, hence to the stream containing the code, to identify which portions are to be interpreted.

The subject-matter of claim 1 therefore only differs from this document D3 in that: the control information selects the portions to be compiled, not the ones to be interpreted. This is a mere alternative to the solution disclosed in D3 for solving the problem of how to indicate whether a portion of code is to be interpreted or compiled.

As a consequence, the subject-matter of claim 1 does not involve an inventive step.

2. The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of independent claim 10 does not involve an inventive step in the sense of Article 33(3) PCT.

2.1 Document D1 discloses (the references in parentheses applying to this document): a data processing method (claim 9), comprising the steps of receiving portions of code of a first type and/or data from a stream, wherein the set of portions transmitted in said stream embodies one or more data processing applications (paragraphs [0010], [0021], figure 1), storing predetermined ones of said portions in a storage means (paragraph [0010]), compiling in a translation engine at least one of said portions comprising first type code into native code of an execution engine, the compiled portions being selected by a control information (paragraphs [0010], [0013], [0023]-[0026]), in the execution engine carrying out one of said data processing applications by executing the compiled native code of the selected portions belonging to said one application and by interpreting non-selected portions of this application (paragraphs [0006], [0007], [0013], [0014], [0021]-[0026]).

The subject-matter of claim 10 therefore differs from document D1 in that:

- the portions of code of a first type and/or data are received from a broadcast network and these portions have been repeatedly transmitted;
- the portions to be compiled are selected by a control information received from the stream from which the portions of code of a first type and/or data are received in the loading engine.

Thus the data processing method as disclosed in document D1 is applied to portions of codes and/or data that have been transmitted in a specific manner, namely repeatedly thru a broadcast network. The mere application of the method on codes and/or data transmitted in this specific manner does not involve an inventive step because the method is independent on how the codes and/or data to which it is applied have been transmitted.

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Furthermore, concerning the second difference mentioned above, the same reasoning as in 1.1 is applicable, thereby demonstrating that selecting the portions to be compiled using control information received from the stream from which the portions of code of a first type and/or data are received in the loading engine lacks inventive step.

Therefore the subject-matter of claim 10 does not involve an inventive step.

2.2 A combination of the reasonings in 2.1 and 1.2 shows that the subject-matter of claim 10 does not involve an inventive step when considering document D3.

Clean set of claims

1. A programmable data processing device comprising :
 - a loading engine (LE) for receiving portions of code of a first type and/or data from a stream (DC) of a broadcast network in which said portions are repeatedly transmitted,
 - a storage means (C) for storing the portions received by the loading engine,
 - an execution engine (EE) for executing an application embodied by the received portions,
 - a translating engine (TE) for translating the first type code into a native code of the execution engine (EE)
 - characterised in that the translating engine (TE) is adapted to store the thus compiled portion in the storage means (C), to compile at least a certain one of said received portions into native code, these portions being selected by a control information received from the stream (DC), and to interpret other portions of code, and that the execution engine (EE) is adapted to process compiled code and interpreted code within a same application.
2. The data processing device according to claim 1, wherein the stream (DC) is a DSM-CC carousel.
3. The data processing device according to claim 2, wherein said portion is all or a fraction of a DSM-CC module (I).
4. The data processing device according to claim 3, wherein the control information is DSM-CC pre-fetch signalling.
5. The data processing device according to claim 3, wherein the translating engine (TE) is adapted to extract the control information from a payload module (T) of the DSM-CC carousel (DC).

6. The data processing device according to claim 5, wherein the translating engine (TE) is adapted to extract compiling optimization information relating to a portion of code to be compiled from said payload module (T) and to heed the compiling optimization in the process of compiling said portion of code.

7. The data processing device according to one of claims 1 to 6, wherein the translating engine (TE) is adapted to decide whether to compile or to interpret a given portion of first type code according to control information received from the execution engine (EE).

8. The data processing device according to claim 7, wherein the translating engine (TE), during compilation of a given first type code portion, is adapted to ignore control information requiring said portion to be interpreted, and to finish compiling the portion.

9. The data processing device according to claim 8, wherein the translating engine (TE), when receiving control information requiring a given first type code portion to be interpreted during compilation of said portion, is adapted to abandon the compilation and to start interpreting the portion.

10. A data processing method, comprising the steps of:
- a) receiving (a1, a1') portions of code (I) of a first type and/ or data (D) from a stream (DC) of a broadcast network in which said portions (I, D) are repeatedly transmitted, wherein the set of portions transmitted in said stream (DC) embodies one or more data processing applications

- b) storing (a6, a9', b3) predetermined ones of said portions in a storage means (C),

- c) compiling in a translation engine at least one of said portions comprising first type code into native code of an execution engine, the compiled portions being selected by a control information received from the stream (DC),

- d) in the execution engine (EE), carrying out one of said data processing applications by executing (c6) the compiled native code (N) of the selected portions belonging to said one application and by interpreting (c7) non-selected portions of this application.

11. The data processing method of claim 10, comprising, between steps c and d, the step of receiving an instruction from a user specifying the application to be carried out in step d.

12. The data processing method according to claims 10 or 11, wherein the stream (DC) is a DSM-CC carousel.

13. The data processing method according to claim 12, wherein said portion is all or a fraction of a DSM-CC module.

14. The data processing method according to claim 13, wherein the control information is DSM-CC pre-fetch information.

15. The data processing method according to claim 13, wherein the control information is a payload module (T) of the DSM-CC carousel (DC).

16. The data processing method of claim 15 wherein the control information further comprises compiling optimization information relating to a portion of code to be compiled, and the translation engine heeds the compiling optimization information when compiling said portion of code.

17. The data processing method according to one of claims claim 10 to 13, wherein the translating engine (TE) decides based on said control information from the execution engine (EE) whether to compile or to interpret a given first type code portion.

18. The data processing method according to claim 17, wherein if the translation engine (TE) receives control information requiring a given portion to be interpreted during compilation of said portion, it ignores (c11) the control information and finishes compiling the portion.

19. The data processing method according to claim 17, wherein if the translation engine (TE) receives control information requiring a given portion to be

interpreted during compilation of said portion, it abandons the compilation (c11') and starts interpreting the portion.

20. The data processing method according one of claims 10 to 19 in which, after step c), memory space allocated to the first type code of the compiled portion is released for overwriting.